INTERPRETATION IC 62.1-2022-6 OF
ANSI/ASHRAE STANDARD 62.1-2022
VENTILATION AND ACCEPTABLE INDOOR AIR QUALITY

Approved: February 8, 2025

Request from: Jake Bradford, Engineer, JMV Consulting Engineering, 37 West 39th Street, New York, NY 10018.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 62.1-2022, Sections 5.4.1 and B2.2, Tables 5-1, B-1, B-2, B-3, Figure B-1, regarding outside air intake minimum distance from a potential outdoor contaminant source.

Background:
Section 5.4.1 states:

Outdoor air intakes (including openings that are required as part of a natural ventilation system) shall be located such that the shortest distance from the intake to any specific potential outdoor contaminant source listed in table 5-1 shall be equal to or greater than:

a. The separation distance in Table 5-1 or
b. The calculation methods in Normative Appendix B

And shall comply with all other requirements of this section.

Section B2. Gives minimum separation distance L calculation methods which states:

The minimum separation distance (*L*) shall be determined using one of the following three approaches.

B2.1 Simple Method. A value of *L* in Table B-1 shall be used.

B2.2 Velocity Method. The value of *L* shall be determined using Equation B-1 (I-P) or B-2 (SI).

$$L = 0.09 * \sqrt{Q} * \left(\sqrt{DF} - \frac{U}{400}\right)(ft) \text{ (B-1)}$$

$$L = 0.04 * \sqrt{Q} * \left(\sqrt{DF} - \frac{U}{2}\right)(m) \text{ (B-2)}$$

where
Q = exhaust airflow rate, cfm (L/s). For gravity vents, such as plumbing vents, use an exhaust rate of 150 cfm (75 L/s). For flue vents from fuel-burning appliances, assume a value of 250 cfm per million Btu/h (0.43 L/s per kW) of combustion input (or obtain actual rates from the combustion appliance manufacturer).
U = exhaust air discharge velocity, fpm (m/s). As shown in Figure B-1, *U* shall be determined using Table B-2.
DF = dilution factor, which is the ratio of outdoor airflow to entrained exhaust airflow in the outdoor air intake. The minimum dilution factor shall be determined as a function of exhaust air class in Table B-3.

For exhaust air comprising more than one class of air, the dilution factor shall be determined by averaging the dilution factors by the volume fraction of each class using Table B-3:

$$DF = \sum(DF_i * Q_i) / \sum(Q_i) \text{ (B-3)}$$

where

DF_i = dilution factor from Table B-3 for class *i* air

Q_i = volumetric flow rate of class *i* air in the exhaust airstream

Section 5.4.1 Tables

Table 5-1 Air Intake Minimum Separation Distance

Object	Minimum Distance, ft (m)
Class 2 air exhaust/relief outlet	10 (3)
Class 3 air exhaust/relief outlet	15 (5)
Class 4 air exhaust/relief outlet	30 (10)
Evaporative heat-rejection equipment exhaust	25 (7.5)
Evaporative heat-rejection equipment intake or basin	15 (5)
Driveway, street, or parking place	5 (1.5)
Garage entry, automobile loading area, or drive-in queue	15 (5)
Garbage storage/pick-up area, dumpsters	15 (5)
Plumbing vents terminating at least 3 ft (1 m) above the level of the outdoor air intake	3 (1)
Plumbing vents terminating less than 3 ft (1 m) above the level of the outdoor air intake	10 (3)
Roof, landscaped grade, or other surface directly below intake	1 (0.30)
Thoroughfare with high traffic volume	25 (7.5)
Truck loading area or dock, bus parking/idling area	25 (7.5)
Vents, chimneys, and flues from combustion appliances and equipment	15 (5)

Section B2. Tables

Table B-1 Minimum Separation Distance

Exhaust Air Class (See Section 5.13)	Separation Distance (L), ft (m)
Significant contaminant or odor intensity (Class 3)	15 (5)
Noxious or dangerous particles (Class 4)	30 (10)

Table B-2 Exhaust Air Discharge Velocity

Exhaust Direction/Configuration	Exhaust Air Discharge Velocity (U) Modifier
Exhaust is directed away from the outdoor air intake at an angle that is greater than 45 degrees from the direction of a line drawn from the closest exhaust point to the edge of the intake.	U given a positive value.
Exhaust is directed toward the intake bounded by lines drawn from the closest exhaust point to the edge of the intake.	U given a negative value.
Exhaust is directed at an angle between the two above cases.	U is zero.
Vents from gravity (atmospheric) fuel-fired appliances, plumbing vents, and other nonpowered exhausts, or if the exhaust discharge is covered by a cap or other device that dissipates the exhaust airstream.	U is zero.
Hot-gas exhausts such as combustion products if the exhaust stream is aimed directly upward and unimpeded by devices such as flue caps or louvers.	Add 500 fpm (2.5 m/s) upward velocity to U.

Table B-3 Minimum Dilution Factors

Exhaust Air Class (See Section 5.13)	Dilution Factor
Significant contaminant or odor intensity (Class 3)	15
Noxious or dangerous particles (Class 4)	50 [a]

a. Does not apply to fume hood exhaust. See Section B1.1.

Section B2. Figure

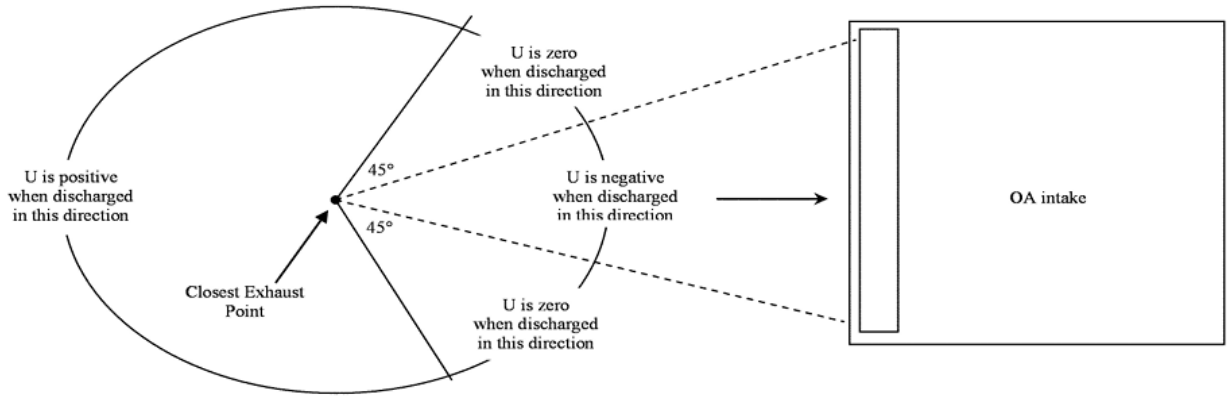

Figure B-1 Exhaust air discharge velocity (U).

Interpretation No.1: Regarding Section 5.4.1, both the separation distances in Table 5-1 and the calculation methods listed in Normative Appendix B are acceptable ways to determine the minimum required distance between an outdoor intake (including but not limited to both operable windows and an outdoor air intake for use in a mechanical ventilation system) and a specific potential outdoor contaminant source.

Question No.1: Is this interpretation correct?

Answer No.1: Yes.

Comments No.1: Per Section 5.4.1, Table 5-1 or Normative Appendix B may be used to calculate the minimum separation distances.

Interpretation No.2: Assuming Interpretation No. 1 is correct and referring to Section B2., if the design engineer opts to use the calculation methods listed in Section B2. to determine the minimum distance *L,* any one of the three calculation methods (B2.1, B2.2, B2.3) will provide an acceptable and accurate minimum distance *L*.

Question No.2: Is this interpretation correct?

Answer No.2: Yes.

Interpretation No.3: When using calculation method B2.2 with exhaust that is determined to be class 2, the dilution factor for class 2 exhaust would be determined by the design engineer since it is not included in Table B-3. Given this, if the design engineer determines an acceptable dilution factor to be 10, 10 would be an acceptable dilution factor for class 2 air for use in Equation B-1.

Question No.3: Is this interpretation correct?

Answer No.3: No.

Comments No.3: Per the definition of "DF" in Appendix B, the minimum dilution factor shall be determined as a function of exhaust air class in Table B-3. Table B-3 only includes minimum dilution factors for Class 3 and Class 4 air. These minimum dilution factors must be used when using method B2.2. For Class 2 air, use Table 5-1 or method B2.3.

Interpretation No.4: When using calculation method B2.2, if an exhaust grille and an outside air intake are on the same exterior wall and the exhaust flow from a powered exhaust is blowing out of a grille in the complete opposite direction of the outside air intake incoming air flow (see below Figure 1 for visual representation of this case), the Exhaust Air Discharge Velocity Modifier (*U*) is a positive value according to Table B-2 and Figure B-1.

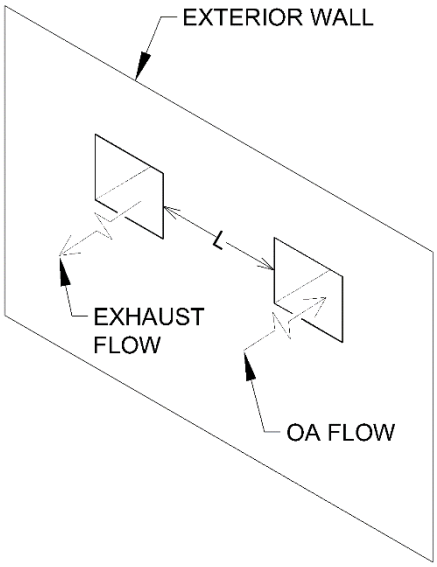

Figure 1: Exhaust Flow Interpretation No.4

Question No.4: Is this interpretation correct?

Answer No.4: Yes.